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November 4, 2002

Ms. Kristy Chew
Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814

RE: Data Responses, Informal Set 8
Cosumnes Power Plant (01-AFC-19)

On behalf of the Sacramento Municipal Utility District, please find attached 12 copies and one original of the Informal Data Responses, Set 8, Transmission System Impact Sensitivity Study, No. 2. This study was requested by Laiping Ng.

Please call me if you have any questions.

Sincerely,

CH2M HILL



John L. Carrier, J.D.
Program Manager

c: Colin Taylor/SMUD
Kevin Hudson/SMUD
Steve Cohn/SMUD

**Cosumnes Power Plant
Transmission System Impact
Sensitivity Study No. 2**

**Sacramento Municipal Utility District
November 4, 2002**

CPP Transmission System Impact Sensitivity Study No. 2

1. Introduction

This sensitivity study is in response to an informal request by the California Energy Commission (CEC) staff to develop a powerflow case with Cosumnes Power Plant (CPP) generation at 500 MW and including the East Altamont Energy Center but not including the Roseville Energy Center, the Rio Linda/Elverta project and the Reliant Energy Colusa Project. This interest is stimulated by recent changes to the CEC Power Plant Project queue, and the objective is to test the performance of such a case during outage conditions. The development and performance of that case is described in this report, and to be consistent with previous work submitted by the Sacramento Municipal Utility District (SMUD), a similar case with CPP generation at 1,000 MW is also included.

The CPP will be constructed adjacent to the SMUD load center on the site of the decommissioned Rancho Seco generation plant previously operated at 913 MW. The first phase of CPP, to be completed in 2005, will have a 500 MW capacity. The second phase will bring the total capacity to 1,000 MW.

This study is actually an exercise in testing system response after a reduction of SMUD imports during heavy summer conditions. In 2005, during heavy summer conditions and with CPP phase 1 in service, SMUD will still need to import more than 1,500 MW. If both phases of CPP could be completed in 2005, SMUD would still need to import more than 1,000 MW during heavy summer conditions. This study considers the impacts of a variety of outages after reducing SMUD imports by 500 MW in 2005 (addition of CPP phase 1) and after reducing SMUD imports by 1,000 MW in 2005 (both phases of CPP).

Spring periods were previously studied under substantially more severe conditions and are not repeated here. Those studies investigated the impacts of significant exports from the local Sacramento area, which included the Roseville and Rio Linda projects. Removal of those projects reduces the export levels and would thus reduce impacts had any been identified, but no significant impacts were identified.

2. Summary

The CPP provides a much-needed resource immediately adjacent to the SMUD load center and also acts to reduce existing overload problems on Western's O'Banion to Elverta transmission lines that tie to the northern portion of the SMUD system.

No significant negative impacts were identified after the addition of CPP at 500 MW or at 1,000 MW for projected 2005 heavy summer conditions during normal (non-outage) system conditions, the 98 single contingency outages studied, or the selected double-line outages.

3. Study Methodology

This study is based on the powerflow case submitted to the CEC for the Roseville Energy Facility AFC and used for the previous CPP sensitivity study. It was originally developed by PG&E for their 2005 assessment study. The case includes area details intended to allow identification of potential system problems, but does not include mitigation. Thus, the case does indicate some element overloads that will be mitigated by future modifications or operational considerations.

This document describes the development of the powerflow cases that include CPP at 500 MW and 1,000 MW and then describes the system responses to a variety of single-line and double-line outages tested for both of those cases

The base case was first modified to reflect CPP generation at 1,000 MW by including CPP (1,000 MW), removing the Roseville Energy Facility (900 MW), removing the Rio Linda/Elverta project (560 MW), removing the Reliant Energy Colusa Project (630 MW), and reducing exports to southern California to compensate for the decrease in total PG&E area generation while maintaining high imports from the Pacific Northwest.

To reflect CPP generation at 500 MW, the 1,000 MW CPP case was modified by reducing CPP by 500 MW (phase 2 out of service), increasing generation at Moss Landing, Helms, Pittsburg and Morro Bay by 100 MW each, and allowing the swing bus generation to make up the difference. The swing generation remained within 15 MW of the original base case.

Tables 1 and 2 of Appendix 1 show element flows of greatest interest during normal (non-outage) conditions when comparing additions of CPP to the base case without CPP. The tables include all PG&E area elements overloaded either before adding CPP or after adding CPP. Element flows are shown in both MVA flow and flow expressed as percent of normal rating. The elements are listed in order of decreasing percent loading, and the final columns in each table indicate the changes in flows resulting from the addition of CPP.

The TransferLimit program was used to aid the identification of single contingency outages for the cases with CPP generation at 1,000 MW and at 500 MW. The TransferLimit output listings included in Appendix 2 show the overloads identified while monitoring and taking single outages of 98 elements in and around the SMUD area and in other selected areas of interest. The elements included in the TransferLimit study are listed in Appendix 3.

The selected double-line outages studied include: both of PG&E's Rancho Seco to Bellota lines, both of Western's Hurley to Tracy lines, and both of SMUD's Rancho Seco to Pocket lines.

4. Study Results

Table 1 of Appendix 1 is a comparison between overloaded lines in the PG&E system under normal (non-outage) conditions for the case before adding CPP and the case with CPP added at a 1,000 MW generation level. The substantial reduction in flows on the Elverta to Natomas line and the Hurley to Procter line are significantly influenced by the removal of the generation at Roseville and Rio Linda. The substantial reduction in flow on the Colusa to Cortina line is primarily the result of removing the Colusa generation. The remaining differences are not significant, with the largest increase in flow being 0.2 MVA (Manteca 115/60 kV transformer). All elements within the PG&E area with flows above normal ratings, either before adding CPP or after, are included, and there are no significant negative impacts.

Table 2 of Appendix 1 is a comparison between overloaded lines in the PG&E system under normal (non-outage) conditions for the case before adding CPP and the case with CPP added at a 500 MW generation level. The substantial reductions in flows on the same lines are the results of the same influences. Again, the remaining differences are not significant, with the largest increase in flow being 0.2 MVA, and there are no significant negative impacts.

The TransferLimit program output listing on Page 1 of Appendix 2 identifies the overloads resulting from the 98 different outages with Cosumnes generation at 1,000 MW. Those outages are listed in appendix 3. Lines overloaded in the base case with flows found to be insignificantly affected by CPP generation (comparisons between Table 1 and Table 2) were not further monitored in this phase of the study. The only contingency overloads identified were 67% overloads for each of the O'Banion to Elverta lines during outages of the other O'Banion to Elverta line. These overloads are not significant for the purposes of this study for the following reasons:

- Cosumnes generation acts to reduce the flows on these lines during these outages. This can be seen by comparing results with Cosumnes generation reduced to 500 MW (page 2 of Appendix 2).
- This is an existing problem for which a remedial action scheme is already employed to reduce generation at the Sutter power plant during these outages and other conditions.
- Sutter generation has already been curtailed several times during overloads of these lines for which there were no associated outages.

The TransferLimit program was also used to identify overloads for the same outages with Cosumnes generation reduced to 500 MW, and that output listing is shown on page 2 of Appendix 2. With Cosumnes generation reduced from 1,000 MW to 500 MW, the O'Banion to Elverta lines were again the only overloaded lines identified. However, the severity of the overloads increased with the reduction in Cosumnes generation, from 67% to 76.6%, and a greater variety of outages resulted in additional (although slight) overloads. These overloads are not significant for the same reasons given above and CPP generation acts to reduce these overloads.

The impacts of 3 different double-line outages near CPP were evaluated with CPP generation at 1,000 MW and at 500 MW. Those double-line outages are: both of PG&E's Rancho Seco to Bellota lines, both of Western's Hurley to Tracy lines, and both of SMUD's Rancho Seco to Pocket lines. The only overloads identified were again on Western's O'Banion to Elverta lines.

With CPP generation at 500 MW, the overloads on the O'Banion to Elverta lines were 9.7% for the double-line Hurley to Tracy outage, 6% for the double-line Rancho Seco to Bellota outage, and 0.6% for the double-line Rancho Seco to Pocket outage.

With CPP generation increased from 500 MW to 1,000 MW, the overloads on the O'Banion to Elverta lines during the double-line Hurley to Tracy outage were reduced from 9.7% to 1.5% and the overloads during the other double-line outages were eliminated altogether.

The overloads identified with the double-line outages are again not significant for the purposes of this study for the same reasons:

- Cosumnes generation acts to reduce the flows on these lines during these outages.
- This is an existing problem for which a remedial action scheme is already employed to reduce generation at the Sutter power plant during these outages and other conditions.
- Sutter generation has already been curtailed several times during overloads of these lines for which there were no associated outages.

Additionally, these overloads on the O'Banion to Elverta lines during double-line outages are far less significant than the overloads on either of those lines during a single-line outage of the other parallel line. The impacts of those single-line outages were determined to be not significant for the purposes of this study for the same reasons given above.

The conclusion, based on the above discussions, is that there are no significant negative impacts attributed to CPP generation, either at 1,000 MW or at 500 MW. The CPP generation does, however, provide benefits in reducing existing and anticipated overload problems on Western's O'Banion to Elverta transmission lines.

Compare Addition of 1000 MW Cosumnes Generation										
From		To		Ckt ID	Before Cosumnes		With Cosumnes		Difference	
Name	kV	Name	kV		MVA	%Rate	MVA	%Rate	MVA	%Rate
ELVERTAS	230	NATOMAS	230	1	388.3	128.8	177.5	59.1	-210.8	-69.7
HURLEY S	230	PROCTER	230	1	375.0	124.4	168.1	55.8	-206.9	-68.6
LOCKFORD	230	LOCKEFRD	60	2	165.7	123.3	165.5	123.2	-0.2	-0.1
PANOCHÉ	230	PNCHE 2M	230	2	132.2	108.6	132.3	108.6	0.1	0.0
PNCHE 2M	230	PANOCHÉ	115	2	130.5	107.2	130.6	107.2	0.1	0.0
LS ESTRS	115	NORTECH	115	1	310.6	106.5	309.9	106.0	-0.7	-0.5
MANTECA	115	MANTECA	60	3	33.1	106.1	33.2	106.3	0.1	0.2
TRIMBLE	115	SJ B E	115	1	146.2	102.5	139.2	97.5	-7.0	-5.0
AM FORST	60	MARTELL	9.11	1	12.7	102.4	12.3	99.5	-0.4	-2.9
ROBBS PK	69	ROBBS PK	13.8	1	24.7	101.4	24.7	101.5	0.0	0.1
DTCH FL2	115	DTCHFLT2	6.9	1	25.4	101.2	25.4	101.1	0.0	-0.1
REL CLUS	230	CORTINA	230	1	347.9	101.0	222.3	65.2	-125.6	-35.8
HIWD TAP	230	HIWD HIT	34.5	1	150.2	100.7	150.4	100.4	0.2	-0.3
SOUTH	60	SOUTH G	9.11	1	7.5	100.4	7.5	99.6	0.0	-0.8

Table 1

Overloads Within the PG&E Area Before and After Modifying the Base Case to Include CPP at 1,000 MW
(Discussed in Section 3, Study Methodology)

Compare Addition of 500 MW Cosumnes Generation										
From		To		Ckt ID	Before Cosumnes		With Cosumnes		Difference	
Name	kV	Name	kV		MVA	%Rate	MVA	%Rate	MVA	%Rate
ELVERTAS	230	NATOMAS	230	1	388.3	128.8	185.5	62.1	-202.8	-66.7
HURLEY S	230	PROCTER	230	1	375.0	124.4	87.8	29.3	-287.2	-95.1
LOCKFORD	230	LOCKEFRD	60	2	165.7	123.3	165.7	123.3	0.0	0.0
PANOCHÉ	230	PNCHE 2M	230	2	132.2	108.6	132.4	108.7	0.2	0.1
PNCHE 2M	230	PANOCHÉ	115	2	130.5	107.2	130.6	107.2	0.1	0.0
LS ESTRS	115	NORTECH	115	1	310.6	106.5	309.5	105.8	-1.1	-0.7
MANTECA	115	MANTECA	60	3	33.1	106.1	32.8	105.1	-0.3	-1.0
TRIMBLE	115	SJ B E	115	1	146.2	102.5	137.0	95.9	-9.2	-6.6
AM FORST	60	MARTELL	9.11	1	12.7	102.4	12.5	101.3	-0.2	-1.1
DTCH FL2	115	DTCHFLT2	6.9	1	25.4	101.2	25.5	101.7	0.1	0.5
ROBBS PK	69	ROBBS PK	13.8	1	24.7	101.4	24.7	101.6	0.0	0.2
REL CLUS	230	CORTINA	230	1	347.9	101.0	217.0	63.6	-130.9	-37.4
HIWD TAP	230	HIWD HIT	34.5	1	150.2	100.7	150.4	100.4	0.2	-0.3
SOUTH	60	SOUTH G	9.11	1	7.5	100.4	7.4	99.3	-0.1	-1.1

Table 2

Overloads Within the PG&E Area Before and After Modifying the Base Case to Include CPP at 500 MW
(Discussed in Section 3, Study Methodology)

Base Case Title:

CPP Sensitivity Study 2 Case with 1000 MW CPP Generation.
From Western's Roseville Energy Facility Study Case.
Based on PG&E 2005 Assessment Area 5 Summer Peak System Case.
Removed REF, Rio Linda and Colusa Generation.

Transfer Schedule Case Title:

CPP Sensitivity Study 2 Case with 1000 MW CPP Generation.
From Western's Roseville Energy Facility Study Case.
Based on PG&E 2005 Assessment Area 5 Summer Peak System Case.
Removed REF, Rio Linda and Colusa Generation.
No Incremental Schedule - Testing for Overloads Only

No non-rated lines were identified.

No forward schedule normal limits were found

2 forward schedule outage limits were found:

Limiting Element					Outage			Schedule	
From Bus	To Bus	ID	From Bus	To Bus	ID	Sens.	MW Limit		
ELVERTAW 230	OBANION 230	1	ELVERTAW 230	OBANION 230	2	0.0000	-67.0%	Overload	
ELVERTAW 230	OBANION 230	2	ELVERTAW 230	OBANION 230	1	0.0000	-67.0%	Overload	

Base Case Title:

CPP Sensitivity Study 2 Case with 500 MW CPP Generation.
 From Western's Roseville Energy Facility Study Case.
 Based on PG&E 2005 Assessment Area 5 Summer Peak System Case.
 Removed REF, Rio Linda and Colusa Generation.

Transfer Schedule Case Title:

CPP Sensitivity Study 2 Case with 500 MW CPP Generation.
 From Western's Roseville Energy Facility Study Case.
 Based on PG&E 2005 Assessment Area 5 Summer Peak System Case.
 Removed REF, Rio Linda and Colusa Generation.
 No Incremental Schedule - Testing for Overloads Only.

No non-rated lines were identified.

No forward schedule normal limits were found

2 forward schedule outage limits were found:

Limiting Element					Outage					Schedule	
From Bus	To Bus	ID			From Bus	To Bus	ID	Sens.	MW Limit		
ELVERTAW 230	OBANION 230	1			ELVERTAW 230	OBANION 230	2	0.0000	-76.6%	Overload	
ELVERTAW 230	OBANION 230	1			GOLDHILL 230	LAKE 230	1	0.0000	-1.2%	Overload	
ELVERTAW 230	OBANION 230	1			BELLOTA 230	RNCHSECO 230	1	0.0000	-0.4%	Overload	
ELVERTAW 230	OBANION 230	1			BELLOTA 230	RNCHSECO 230	2	0.0000	-0.4%	Overload	
ELVERTAW 230	OBANION 230	1			ELKGROVE 230	RNCHSECO 230	1	0.0000	-0.3%	Overload	
ELVERTAW 230	OBANION 230	2			ELVERTAW 230	OBANION 230	1	0.0000	-76.6%	Overload	
ELVERTAW 230	OBANION 230	2			GOLDHILL 230	LAKE 230	1	0.0000	-1.2%	Overload	
ELVERTAW 230	OBANION 230	2			BELLOTA 230	RNCHSECO 230	1	0.0000	-0.4%	Overload	
ELVERTAW 230	OBANION 230	2			BELLOTA 230	RNCHSECO 230	2	0.0000	-0.4%	Overload	
ELVERTAW 230	OBANION 230	2			ELKGROVE 230	RNCHSECO 230	1	0.0000	-0.3%	Overload	

Lines Monitored and Outages Performed

From Bus	To Bus	ID	MW Flow	Rated Amp		Outage Flag	Area
				Norm	Emer		
ARBUCKLE 60	CORTINA 60	1	-22	438	512	outage	PG AND E
ATLANTC 230	GOLDHILL 230	1	118	826	977	outage	PG AND E
ATLANTC 230	RIO OSO 230	1	-247	826	977	outage	PG AND E
BAHIA 230	VACA-DIX 230	1	-166	906	1053	outage	PG AND E
BELLOTA 230	BRIGHTON 230	1	-53	751	864	outage	PG AND E
BELLOTA 230	COTTLE A 230	1	50	742	850	outage	PG AND E
BELLOTA 230	COTTLE B 230	1	124	636	745	outage	PG AND E
BELLOTA 230	LOCKFORD 230	1	42	752	864	outage	PG AND E
BELLOTA 230	RNCHSECO 230	1	-4	1240	1481	outage	PG AND E
BELLOTA 230	RNCHSECO 230	2	-4	1240	1481	outage	PG AND E
BELLOTA 230	TESLA E 230	1	-40	1715	1715	outage	PG AND E
BELLOTA 230	WEBER 230	1	74	1715	1715	outage	PG AND E
BRIGHTON 230	RIO OSO 230	1	-177	752	864	outage	PG AND E
CACHE J1 115	CORTINA 115	1	-32	492	562	outage	PG AND E
CAMINO S 230	LAKE 230	1	198	760	880	outage	PG AND E
CAMINO S 230	UNIONVLY 230	1	-132	770	900	outage	PG AND E
CAMINO S 230	WHITEROK 230	1	54	770	900	outage	PG AND E
CAMPBELL 230	HEDGE 230	1	156	1200	1380	outage	PG AND E
CAMPBELL 230	POCKET 230	1	-31	1200	1380	outage	PG AND E
CARMICAL 230	HURLEY S 230	1	-131	760	880	outage	PG AND E
CARMICAL 230	ORANGEVL 230	1	-48	1037	1157	outage	PG AND E
CORTINA 60	HUSTD 60	1	5	279	327	outage	PG AND E
CORTINA 60	WADHMJCT 60	1	4	279	327	outage	PG AND E
CORTINA 60	WILL JCT 60	1	13	279	327	outage	PG AND E
CORTINA 115	INDIN VL 115	1	55	492	562	outage	PG AND E
CORTINA 230	REL CLUS 230	1	-222	838	964	outage	PG AND E
CORTINA 230	VACA-DIX 230	1	86	838	964	outage	PG AND E
COTTLE B 230	WARNERVL 230	1	105	636	745	outage	PG AND E
COTWD_E 230	LOGAN CR 230	1	161	781	964	outage	PG AND E
COTWD_E 230	ROUND MT 230	1	-140	752	864	outage	PG AND E
COTWD_E 230	ROUND MT 230	2	-135	635	746	outage	PG AND E
COTWDWAP 230	ROSEVILL 230	1	0	800	800	outage	PG AND E
EAST CTY 115	HEDGE 115	1	-120	760	880	outage	PG AND E
EAST CTY 115	HURLEY 115	1	-11	760	880	outage	PG AND E
EAST CTY 115	MID CTY 115	1	39	760	880	outage	PG AND E
EAST CTY 115	MID CTY 115	2	39	760	880	outage	PG AND E
EIGHT MI 230	GOLDHILL 230	1	-43	826	977	outage	PG AND E
EIGHT MI 230	TESLA E 230	1	-83	826	977	outage	PG AND E
ELKGROVE 230	HEDGE 230	1	76	1520	1761	outage	PG AND E
ELKGROVE 230	RNCHSECO 230	1	-372	1520	1761	outage	PG AND E
ELVERTAS 115	NORTHCTY 115	1	45	760	880	outage	PG AND E
ELVERTAS 230	ELVERTAW 230	1	-569	3000	3000	outage	PG AND E
ELVERTAS 230	FOOTHILL 230	1	106	760	880	outage	PG AND E
ELVERTAS 230	HURLEY S 230	3	0	760	879	outage	PG AND E
ELVERTAS 230	NATOMAS 230	1	177	760	880	outage	PG AND E
ELVERTAS 230	ORANGEVL 230	1	65	760	880	outage	PG AND E
ELVERTAW 230	FIDDYMNT 230	1	124	800	800	outage	PG AND E
ELVERTAW 230	OBANION 230	1	-393	1054	1054	outage	PG AND E
ELVERTAW 230	OBANION 230	2	-393	1054	1054	outage	PG AND E
ELVERTAW 230	ROSEVILL 230	1	64	800	800	outage	PG AND E

					Rated Amp					
				MW	-----		Outage			
From Bus	To Bus	ID	Flow	Norm	Emer	Flag	Area			
FIDDYMNT	230 ROSEVILL	230	1	-0	800	800	outage	PG	AND	E
FOOTHILL	230 ORANGEVL	230	1	-1	760	880	outage	PG	AND	E
GOLDHILL	230 LAKE	230	1	90	760	880	outage	PG	AND	E
GOLDHILL	230 LODI	230	1	43	826	977	outage	PG	AND	E
GOLDHILL	230 RIO OSO	230	1	-199	826	977	outage	PG	AND	E
HEDGE	115 HEDGE	230	2	-65	120	120	outage	PG	AND	E
HEDGE	115 HEDGE	230	4	-82	150	150	outage	PG	AND	E
HEDGE	115 HEDGE	230	6	-113	200	200	outage	PG	AND	E
HEDGE	115 SOUTHCTY	115	1	70	500	580	outage	PG	AND	E
HEDGE	115 SOUTHCTY	115	2	70	500	580	outage	PG	AND	E
HEDGE	230 PROCTER	230	1	-1	1516	1757	outage	PG	AND	E
HEDGE	230 RNCHSECO	230	1	-257	1520	1761	outage	PG	AND	E
HEDGE	230 WHITEROK	230	1	-134	760	880	outage	PG	AND	E
HURLEY	115 HURLEY S	230	1	-115	200	200	outage	PG	AND	E
HURLEY	115 NORTHCTY	115	1	52	760	880	outage	PG	AND	E
HURLEY	115 NORTHCTY	115	2	52	760	880	outage	PG	AND	E
HURLEY S	230 PROCTER	230	1	-162	760	880	outage	PG	AND	E
HURLEY S	230 TRCY PMP	230	1	-152	800	800	outage	PG	AND	E
HURLEY S	230 TRCY PMP	230	2	-155	800	800	outage	PG	AND	E
INTAKE	230 WARNERVL	230	1	124	838	965	outage	PG	AND	E
INTAKE	230 WARNERVL	230	2	124	838	965	outage	PG	AND	E
JAYBIRD	230 UNIONVLY	230	1	-9	700	820	outage	PG	AND	E
JAYBIRD	230 WHITEROK	230	1	129	700	820	outage	PG	AND	E
LAKE	230 ORANGEVL	230	1	0	760	880	outage	PG	AND	E
LAKE	230 POCKET	230	1	-54	760	880	outage	PG	AND	E
LOCKFORD	230 RIO OSO	230	1	-113	752	864	outage	PG	AND	E
LOSBANOS	230 WESTLEY	230	1	-35	1486	1702	outage	PG	AND	E
MID CTY	115 STA. B	115	1	19	760	880	outage	PG	AND	E
NORTHCTY	115 STA. A	115	1	36	350	350	outage	PG	AND	E
NORTHCTY	115 STA. A	115	2	36	350	350	outage	PG	AND	E
NORTHCTY	115 STA. B	115	1	-1	485	485	outage	PG	AND	E
NORTHCTY	115 STA. B	115	2	-1	485	485	outage	PG	AND	E
ORANGEVL	230 WHITEROK	230	1	-0	760	880	outage	PG	AND	E
PALERMO	230 TBL MT D	230	1	-131	826	977	outage	PG	AND	E
PARKWAY	230 VACA-DIX	230	1	-141	906	1053	outage	PG	AND	E
POCKET	230 RNCHSECO	230	1	-178	1520	1761	outage	PG	AND	E
POCKET	230 RNCHSECO	230	2	-178	1520	1761	outage	PG	AND	E
PRKR MID	230 WALNT	230	1	-13	1600	1600	outage	PG	AND	E
PRKR MID	230 WESTLEY	230	1	-333	1632	1878	outage	PG	AND	E
SOUTHCTY	115 STA. B	115	1	73	760	880	outage	PG	AND	E
STA. A	115 STA. D	115	1	8	600	600	outage	PG	AND	E
STA. B	115 STA. D	115	1	40	600	600	outage	PG	AND	E
STAGG	230 TESLA E	230	1	-137	826	977	outage	PG	AND	E
STOREY 2	230 WARNERVL	230	1	-95	636	745	outage	PG	AND	E
TESLA D	230 TESLA E	230	1	308	2001	2001	outage	PG	AND	E
TESLA E	230 WEBER	230	1	108	1715	1715	outage	PG	AND	E
TESLA E	230 WESTLEY	230	1	104	1504	1727	outage	PG	AND	E
WALNT	230 WESTLEY	230	1	-305	1600	1600	outage	PG	AND	E